CERTIFICATE OF MAILING BY FIRST CLASS MAIL (37 CFR 1.8)				Docket No.	
Applicant(s): J. G. Walacavage				200-0667	

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit
09/966,121	September 28, 2001	Gebresilassie, Kibrom K.	33481	2128

Invention: **METHOD OF EMULATING MACHINE TOOL BEHAVIOR FOR PROGRAMMABLE LOGIC CONTROLLER LOGICAL VERIFICATION SYSTEM**

I hereby certify that this **Reply Brief (in triplicate)**

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February 10, 2009

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P07A/REV04

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Art Unit: 2128	)	
	)	
Examiner: K. Gebresilassie	)	
	)	
Applicant(s): J. G. Walacavage et al.	)	
	)	
Serial No.: 09/966,121	)	
	)	**REPLY BRIEF**
Filing Date: September 28, 2001	)	
	)	
For: METHOD OF EMULATING	)	
MACHINE TOOL BEHAVIOR FOR	)	
PROGRAMMABLE LOGIC CONTROLLER	)	
LOGICAL VERIFICATION SYSTEM	)	
	)	

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

This Reply Brief is directed to new points of argument raised in the Examiner's

Answer dated December 10, 2009 for the above-identified application. On page 12 of the

Examiner's Answer, the Examiner argues that, in order to allow a user to add robots to interact with

the fixture and clamps and to describe how the tooling should operate "as designed" or "as

expected" condition, there must be an incremental recording of each piece of geometry of the robot

and clamp moved through space over a period of time. Further, on page 12 of the Examiner's

Answer, the Examiner argues that the Walacavage et al. reference discloses playing a line model by

the line verification system wherein the line verification system is a viewing tool, which is driven by

the control model (i.e. mechanical model) described by the neutral control model files (i.e.

transformational arrays). In addition, on page 14, the Examiner argues that it is noted that the features upon which applicant relies (i.e., the user can observe the motion of the mechanical model using the actual PLC code as if they were watching a machine or manufacturing line of a vehicle assembly plant floor) are not recited in the rejected claim(s).

Appellants respectfully disagree with the Examiner as to the above arguments. As to the first argument, the Examiner argues that, in order to allow a user to add robots to interact with the fixture and clamps and to describe how the tooling should operate "as designed" or "as expected" condition, there must be an incremental recording of each piece of geometry of the robot and clamp moved through space over a period of time. There is no factual basis in the reference relied upon which supports the Examiner's argument.

In Walacavage '441, the method uses a neutral control model file and lacks the steps of generating transformational arrays for a mechanical model by incrementally recording one position of each piece of geometry of the mechanical model moved through space over a period of time using a computer. In Walacavage '441, Column 2, line 54, through Column 3, lines 1 through 40, states that the neutral control model file is a neutral file that contains a definition of a "control model". This term "neutral" is meaningful in that the control file used in this process is not specific to any one PLC hardware platform nor is it specific to any one manufacturing tooling design or process planning system. The neutral control model file contains a description of interlocked events (sometimes referred to as networked event) which define the required dependencies, actions and signals that are associated with sequencing and cycling manufacturing tooling devices. For example, in constructing a vehicle body (not shown) of the motor vehicle, the control model would have individual events that described when the conditions were correct for a clamp to open or close.

In the present application, on page 9, lines 9 through 14, the method includes generating transformational arrays based on CAD geometries during the design phase of the machinery for the mechanical model. The transformational arrays are movies of manipulation of individual components in the mechanical model and are generated with the mechanical tool design system 16 and not a neutral control model file. As a result, the neutral control model file is not the same thing as a mechanical model with the transformational arrays of the present application. As stated on page 10, lines 3 through 6 of the present application, within the motion player 30, these transformational arrays are sequenced to give a first pass rendition of what the overall machine or manufacturing line behavior will be, which is entirely different from the neutral control model file of Walacavage '441. Walacavage '441 does not perform the steps of generating transformational arrays for a mechanical model by incrementally recording one position of each piece of geometry of the mechanical model moved through space over a period of time using a computer as claimed by Applicants. The Examiner is merely speculating that there must be an incremental recording of each piece of geometry of the robot and clamp moved through space over a period of time in order to allow a user to add robots to interact with the fixture and clamps without any factual basis in Walacavage '441. Therefore, it is respectfully submitted that the Examiner has misinterpreted the Walacavage '441 reference and the rejection under 35 U.S.C. § 102 is clearly wrong.

As to the second argument, the Examiner argues that the Walacavage et al. reference discloses playing a line model by the line verification system wherein the line verification system is a viewing tool, which is driven by the control model (i.e. mechanical model) described by the neutral control model files (i.e. transformational arrays).

However, Walacavage '441 lacks constructing a motion file based on the mechanical model and the CAD transformational arrays using the computer and viewing the motion of the

motion file in a motion viewer using the computer to determine whether the motion of the mechanical model is acceptable. In Walacavage '441, there is a virtual PLC generator 15 that generates PLC code and a line verification system 14 that verifies the PLC code. In Walacavage '441, it is clear in Column 2, lines 37 and 39, that the line verification system 14 verifies the PLC code for the line model. In Walacavage '441, it is clear in Column 3, lines 59 through 62, that the method then advances to block 32 and plays a line model by the line verification system 14, which is driven by the control model described within the neutral control model files. However, the Examiner is merely speculating that the control model is the mechanical model and that the neutral control model files are the transformational arrays.

As stated on page 10, lines 3 through 6 of the present application, within the motion player 30, these CAD transformational arrays are sequenced to give a first pass rendition of what the overall machine or manufacturing line behavior will be, which is entirely different from the neutral control model file of Walacavage '441. The claim language is to be read in view of the specification as it would be interpreted by one of ordinary skill in the art. In re Morris, 127 F.3d 1048, 1053-54, 44 U.S.P.Q.2d 1023, 1027 (Fed. Cir. 1997). In the present application, on page 8, lines 18 and 19, it is the verification system 18 that verifies the PLC code and on page 12, line 17 through page 13, line 18, it is the motion player that plays the motion file, which is a series of transformations that represent the motion path of a three-dimensional object through simulation space. As such, Walacavage '441 does not disclose constructing a motion file based on the mechanical model and the CAD transformational arrays using the computer and viewing the motion of the motion file in a motion viewer using the computer to determine whether the motion of the mechanical model is acceptable as claimed by Applicants. Therefore, it is respectfully submitted that the Examiner has
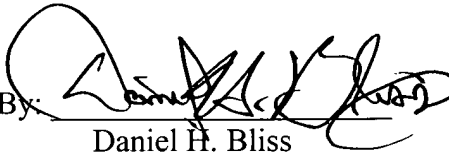
misinterpreted the Walacavage '441 reference and the rejection under 35 U.S.C. § 102 is clearly wrong.

As to the third argument, the Examiner argues that it is noted that the features upon which applicant relies (i.e., the user can observe the motion of the mechanical model using the actual PLC code as if they were watching a machine or manufacturing line of a vehicle assembly plant floor) are not recited in the rejected claim(s).

Applicants have claimed the features of replicating the motion of the mechanical model by generating a PLC code for the motion of the mechanical model using the computer if the motion of the mechanical model was acceptable and using the accepted motion of the mechanical model to compare the behavior of the PLC code relative to the accepted motion by playing the PLC code with a PLC emulator. As stated on page 14, lines 11 through 14 of the present application, the user 12 exports the PLC code to the PLC emulator 20 to play and visualize the PLC code, which is entirely different from the PLC code generator 15 of Walacavage '441. In Walacavage '441, there is a virtual PLC generator 15 that generates PLC code and a line verification system 14 that verifies the PLC code, but there is no additional PLC emulator to play the PLC code such that the user can observe the motion of the mechanical model using the actual PLC code as if they were watching a machine or manufacturing line of a vehicle assembly plant floor. As such, Applicants have claimed the features of replicating a motion of a mechanical model by generating a PLC code for the motion of the mechanical model using a computer if the motion of the mechanical model was acceptable and using the accepted motion of the mechanical model to compare the behavior of the PLC code relative to the accepted motion by playing the PLC code with a PLC emulator upon which Applicants rely. Therefore, it is respectfully submitted that the rejection under 35 U.S.C. § 102 is clearly wrong.

Accordingly, it is respectfully requested that the rejection of the pending claims be reversed and that the claims pending in the present application be allowed.

Respectfully submitted,

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Date: February 10, 2009

Attorney Docket No.: 0693.00258
Ford Disclosure No.: 200-0667